

Appl. No. 09/176,639

Arndt. Dated August 27, 2004

Reply to Office action of June 2, 2004

REMARKS

Claims 16, 21-36, 37-40, 42-50 and 52-63 are currently pending in the application.

Applicants have canceled claims 17-20, 41 and 51, and amended claims 16, 21, 22, 23, 24, 28, 29, 30, 32, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, and 50. Applicants request reconsideration of the application in light of the following remarks.

Rejections under 35 U.S.C. § 112

Claims 16-25, 28, 30, 41 44 and 51 were rejected by the Examiner under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. The above amendments cancel claims 17-20, 41 and 51. Applicants submit that the remaining claims, as amended above, meet the requirements under 35 U.S.C. 112, first paragraph.

With regard to independent claim 16, the Examiner stated that the limitations of "said touch layer having a conductivity selected to create an electrical image of a conductive object that is larger . . ." is not shown in the specification and thus would be considered new matter. Applicants have amended claim 16 to instead recite "said touch layer having a conductivity selected to create an electrical image of a conductive object that is larger . . ." Applicants submit that the specification numerous locations teaches the use of the touch layer to create an image of the conductive object, and that amended independent claim is fully supported by the specification. For example, at page 8, lines 25-31 describe the use of the conductive layer to spread out the ground image and thus form a larger second capacitor plate. Likewise, at page 9, line 14 to page 10, line 6, describes adjusting the image size by controlling the conductivity of the conductive layer. See page 10, lines 3-6 specifically. Applicants thus submit that amended independent claim 16 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

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With regard to claim 21, the Examiner presumably again objected to the term "electrical image". Applicants have amended claim 21 to instead recite "form the image" and submit that it is properly supported for the same reasons given above with respect to amended independent claim 16.

With regard to claim 22, the Examiner stated that the limitation of "... a larger capacitive plate for coupling to said sensor layer..." is not disclosed in the specification. Applicants have amended the claim to read that the "wherein said image in said touch layer is configured to form forms a larger effective capacitive plate for coupling to said sensor layer". Applicants submit that this is disclosed in applicants' specification at page 8, lines 25-31, where the conductive layer is described as effectively spreading out the ground image and forming a larger second capacitor plate. Thus, applicants submit that the amended claim 22 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

With regard to claim 23, the Examiner presumably again objected to the term "electrical image". Applicants have amended claim 23 to instead recite "image" and submit that it is properly supported for the same reasons given above with respect to amended independent claim 16.

With regard to claim 24, the Examiner stated that the limitation of "... to limit the size of the electrical image within the limits of said sensor layer" is not disclosed. Applicants have amended claim 24 to recite that the touch layer is configured to limit the size of the "image to four times the area of contact of said conductive object" and submit that this is properly disclosed at page 12, lines 4-16. Thus, applicants submit that the amended claim 24 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

With regard to claim 25, the Examiner stated that the limitation of "wherein said touch layer is formed with a conductive material disposed in a plastic carrier" is not disclosed. Applicants respectfully disagree, and note that page 9, lines 3-5 specifically describes "conductive powder in a plastic carrier material such as epoxy". Applicants thus submit that

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claim 25 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

With regard to claim 28, the Examiner stated that the limitation of a "display in operative communication below said sensor layer" is not disclosed. Applicants respectfully disagree, and submit that the specification, at page 11, lines 24-30, describe a touch pad system where the layers are made transparent and the assembly is placed "over a display screen such as a liquid crystal display (LCD)..." Applicants thus submit that claim 28 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

With regard to claim 30, the Examiner stated that the limitation of a "wherein a user is in electrical communication with said conductive object" is not disclosed. Applicants disagree, and have amended claim 30 to further clarify the recited limitation. Specification, claim 30 has been submitted to recite that "the conductive object comprises a conductive stylus held by a user such that said user is in electrical communication with said stylus." Applicants note that the use of a conductive stylus held by a user and thus effectively grounded is disclosed at page 9, lines 5-8. Applicants thus submit that claim 30 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

With regard to claim 44, the Examiner stated that the limitation of a "wherein said visual mark is produced by chemical reaction resulting from contact of said conductive object" is not disclosed. Applicants have amended claim 44 to read "wherein said visual mark is produced by a chemical property". Applicants note that this is disclosed in the specification at page 11, lines 17-20. Applicants thus submit that claim 44 meets the requirements of 35 U.S.C. 112, first paragraph, and request that the rejection be withdrawn.

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Rejections under 35 U.S.C. § 103

To establish a prima facie case of obviousness under 35 U.S.C. § 103, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the cited prior art reference must teach or suggest all of the claim limitations. Furthermore, the suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based upon the Applicants' disclosure. A failure to meet any one of these criteria is a failure to establish a prima facie case of obviousness. MPEP §2143.

Claims 16-25 and 27-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Grabner et al (U.S. Patent No. 4,731,694), in light of Greanias et al (U.S. Patent No. 5,386,219). As to independent claim 16, the Examiner stated that Grabner disclosed a touch pad system comprising a sensor layer and an insulative layer (citing FIG. 1 items 7, 8 and 24, and column 3 lines 20-22, 31-61 and column 4, lines 26-30.) The Examiner noted that in one special embodiment of the touch pad the insulative layer 24 also comprises a metallized layer as a conductor on an upper flat surface. The Examiner then admitted that Grabner does not disclose the touch layer having a conductivity selected to create an electrical image of a conductive object that is larger than an area of contact of said conductive object contacting said touch layer. However, the Examiner then stated that Greanias discloses the conductive object being either a finger or stylus, and where a touch pad module is used to enable said device to distinguish finger and stylus contact. The Examiner also stated that Greanias discloses the signal from the conductive object radiates and wherein the conductive layer is of a resistance to expand a small contact area of a tip of a conductive stylus into an image of suitable size for position measurement. The Examiner then concluded that it would have been obvious for one of ordinary skill in the art to combine the system of Grabner with that of Greanias as they both disclose a touch panel with sensor, insulative and conductive layers where a finger or stylus may be used.

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In the above amendment applicants have amended independent claims 16, 37, 42 and added new independent claims 52 and 63. Applicants submit that these independent claims are patentably distinct over the cited combination of references for several reasons. Specifically, with regard to amended independent claim 16, applicants have amended independent claim 16 to recite that the touch layer has “a conductivity selected to create an image of a conductive object that is larger than an area of contact of said conductive object, and wherein said sensor layer capacitively detects the image of said conductive object when a user places a conductive object proximate said touch layer.” Thus, amended independent claim 16 is directed toward a touch pad system that capacitively detects the image of said conductive object. As described in applicants’ specification, capacitive touch pad systems can use measured capacitance in horizontal and vertical sensing electrodes to determine the location of a conductive object such as a finger or stylus. See applicants’ specification at page 6, lines 7-14. The claimed invention facilitates an improved touch pad system by providing a conductive touch layer that creates a relatively larger image of the conductive object. The larger image increases the capacitance that can be detected, and thus facilitates improved detection by the sensor layer and thus improves position determination. See applicants’ specification at page 8, lines 25 to page 9, line 17.

In contrast, the touch pad disclosed in Grabner is best described a resistive-based touch pad where a change in resistance is used to determine object location. Specifically, a pressure-dependent resistance is coupled to fixed capacity and used as the measuring variable. See the abstract of Grabner. See also column 4, lines 37-63 and FIG. 2 that illustrate an equivalent circuit diagram for the Grabner touch pad and describe it as being based upon a change in resistance due to pressure on the touch pad. Nowhere is Grabner described as capacitively detecting an object or “an image of the conductive object” as recited in independent claim 16.

Furthermore, applicants note that the covering 24 of Grabner is described as metallized on its upper flat side and electrically grounded, with the metallization effective as a shield. See column 4, lines 26-29. Applicants submit that such a presumably high-conductivity, grounded layer would hinder any sort of effective capacitive detection of an image of a conductive object.

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Thus, Grabner does not teach capacitive detection, nor could the metallized layer 24 be used to generate an image that is capacitively detected.

With regard to the Greanias, the Examiner stated that Greanias in column 4, lines 39-68 and column 6, lines 31-54, disclosed a conductive layer that is of a resistance as to expand a small contact area of a tip of a conductive stylus into an image of a suitable size for position measurement. Applicants again respectfully disagree. Applicants admit that the Greanias reference does describe a touch pad that uses capacitance to detect the presence of a stylus or finger. However, nowhere does Greanias describe the use of a touch layer that is conductive and forms an image that is capacitively detected, as substantially recited in applicants' amended independent claim 16.

For example, FIG. 1 and column 5, lines 43-63 of Greanias illustrate and describe a touch pad system. The overlay 16 of the Greanias touch pad is described as a laminate structure including several plastic substrate layers laminated together. Inside the overlay are conductors 16A disposed in the vertical direction and 16B disposed in the horizontal directions. The layers that make up the touch pad are illustrated in more detail in FIGS. 5, 6 7 and 8 Greanias. In all cases, the top cover or "touch layer" is either described as an insulator or its conductivity is not specified. For example, with regard to FIG. 5, the protective top cover 98 is described as being similar in composition to lower and upper substrates 90 and 94, and these substrates are described as being sheets of transparent, insulating material. See Greanias at column 17, lines 27-47. With regard to FIG. 6, the conductivity of the top layer 98 is not specified. However, given that the same reference numeral 98 is used it should again be interpreted to be an insulative layer. With regard to FIGS. 7 and 8, the top layer is an upper substrate 94, again using the same reference numeral that is described as a transparent insulating material with reference to FIG. 6. Finally, each of the independent claims 1, 10, 15, and 28 in Grabner recite a top cover "of a flexible, transparent, insulating material".

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In summary, the Greanias reference does not teach the use of any top layer that has a "conductivity selected to create an image of a conductive object" as recited in applicants amended independent claim 16. In fact, Greanias explicitly teaches away from the claimed invention by describing its top layer only as insulative.

Thus, neither Greanias nor Grabner teach the use of any top layer that has a "conductivity selected to create an image of a conductive object" or where the "sensor layer capacitively detects the image of said conductive object when a user places a conductive object proximate said touch layer". Thus, applicants respectfully submit that amended independent claim 16 is patentably distinct over the cited combination of references.

Applicants likewise submit that amended independent claim 37 is patentably distinct over the cited combination of references. Independent claim 37 has been amended to recite that "wherein when a user places a conductive object proximate said conductive touch layer said sensor layer detects a change in capacitance, said conductive touch layer configured to create an image larger than an area of contact of said conductive object to increase the detected change in capacitance;" Thus, claim 37 likewise recites a touch pad system with a conductive touch layer configured to create an image to increase the detected change in capacitance. As discussed above, the cited combination of references fails to teach a touch pad that includes such a conductive touch layer. Thus, amended independent claim 37 is patentably distinct over the cited references.

Applicants likewise submit that amended independent claim 42 is patentably distinct over the cited combination of references. Independent claim 42 has been amended to recite that "wherein when a user contacts a conductive object to said conductive touch layer said sensor layer detects a change in capacitance, said conductive touch layer having a conductivity selected to create an image of said conductive object that is larger than an area of contact of said conductive object to increase the detected change in capacitance," Thus, claim 42 likewise

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recites a touch pad system with a conductive touch layer configured to create an image that increases the detected change in capacitance. As discussed above, the cited combination of references fails to teach a touch pad that includes such a conductive touch layer. Thus, amended independent claim 42 is patentably distinct over the cited references.

Applicants likewise submit that new independent claims 52 and 63 are patentably distinct over the cited combination of references. These claims also recite "a conductive touch layer disposed over said insulative layer, wherein said sensor layer, said insulative layer and said conductive touch layer are configured to form a capacitor with a conductive object when a user places said conductive object proximate said sensor layer, said formed capacitor having a capacitance determined in part by the conductive touch layer and the conductive object". Claim 52 recites that the "conductive touch layer has a conductivity selected to create an image of said conductive object that is larger than an area of contact of said conductive object to thereby increase the capacitance of the formed capacitor and facilitate sensing of the capacitance to determine a position of the conductive object". Claim 63 likewise recites that "the conductive touch layer comprises conductive carbon disposed in epoxy and has a conductivity selected to create an image of said conductive object that is at least four times larger than an area of contact of said conductive object to thereby increase the capacitance of the formed capacitor and facilitate sensing of the capacitance to determine a position of the conductive object". As discussed above, the cited combination of references fails to teach a touch pad that includes any such conductive touch layer. Thus, new independent claims 52 and 63 are patentably distinct over the cited references.

Thus, applicants submit that independent claims 16, 37, 42, 52 and 62 are patentably distinct over the cited references. Furthermore, as claims 21-36, 38-40, 53-50, and 53-61 depend from, and include all the limitations of their respective independent claims, they are also submitted to be patentably distinct over the cited references. Furthermore, the independent and dependent claims include various other limitations that are not found in the cited references.

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In summary, and in view of the amendments herein, none of the references cited by the Examiner nor any other known prior art, either alone or in combination, disclose the unique combination of features disclosed in applicant's claims presently on file. For this reason, allowance of all of applicant's claims is respectfully solicited.

Regarding Doctrine of Equivalents

Applicants hereby declare that any amendments herein that are not specifically made for the purpose of patentability are made for other purposes, such as clarification, and that no such changes shall be construed as limiting the scope of the claims or the application of the Doctrine of Equivalents.

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CONCLUSION

It is requested that a Request for Continued Examination be granted for the filing of this response, and the appropriate filing fee of \$770.00 is hereby authorized to be charged to deposit account no. 50-2091.

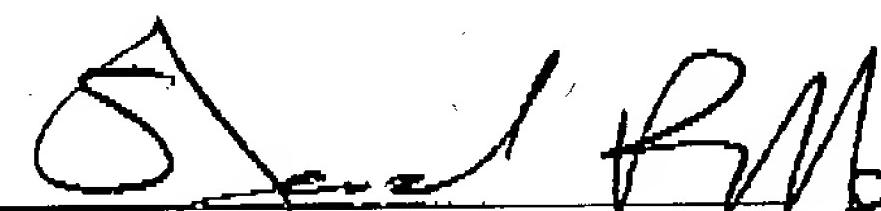
The amendments herein added 2 new independent and 10 new dependent claims. In addition 6 claims have been cancelled, 2 of which were independent resulting in fees due of \$108.00. The Commissioner is also authorized to charge this fee to deposit account no. 50-2091.

If any fees, including extension of time fees or additional claims fees, are due as a result of this response, please charge Ingrassia Fisher & Lorenz Deposit Account No. 50-2091. This authorization is intended to act as a constructive petition for an extension of time, should an extension of time be needed as a result of this response. The Examiner is invited to telephone the undersigned if this would in any way advance the prosecution of this case.

Respectfully submitted,
INGRASSIA FISHER & LORENZ

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